INDEX TO VOLUME 27.

NOTES.

1. For authors of papers and for the names of debaters upon them SMALL CAPS are used.

2. *Italic type* is used for the full title of papers. Cross references to the subject of a paper which may not be its exact title are in Roman type, as are the titles under the caption of the author's name.

3. The Society is not responsible as a body for the statements of fact or opinion in its papers and discussions.

PAGE

Air, measurement of 193
ALMOND, THOMAS RICHARD, memorial notice of 823

BACON, J. L., and MOSELEY, A. W., effect of a blow 605
BAILEY, L. G., disc., natural gas under boilers, 182; report on locomotive tests 636
Ball bearings 420
BARNES, HOWARD T., formation of anchor ice and precise temperature measurements 41
BARRUS, GEO. H., disc., thermo-electric pyrometer 588
BASFORD, GEO. M., disc., bearings 438
Bearings 420
BEEN, P. H., disc., bearings 439
BEMENT, A., disc., thermo-electric pyrometer and compensator 589
Bessemer steel tubes, collapsing pressures of 730
BINSSE, H. L., disc., introduction system of shop management 725
Blow, effect of 605
Boilers, natural gas under 171
BRISTOL, WM. H., low resistance thermo-electric pyrometer and compensator, 552; disc., thermo-electric pyrometer 588
BROWN, J. ROWLAND, disc., natural gas under boilers 185
BURR, WILLIAM H., and WARNER, WORCESTER R., conditions at Panama and the reasons for a sea-level canal 41
BURY, EDMUND, memorial notice of 823
BUVINGER, GEO. A., turbine design as modified for close regulation 698

CALDER, JOHN, disc., ideals in industrial engineering 356
CARPENTER, R. C., disc., bearings 422
CARY, A. A., disc., producer gas tests, 338; thermo-electric pyrometer 570
CASSIER, LOUIS, memorial notice of 824
CATT, GEORGE WILLIAM, memorial notice of 825
Chattanooga meeting, proceedings of 509
" and Tennessee River Company's power installation at Hale's Bar, Tenn. 520
Coal-testing plant 302
Collapsing pressures of Bessemer steel lap-welded tubes, three to ten inches in diameter, R. T. STEWART 730

PAGE
Compensator. . . . 552
Concrete, reinforced . . . 373
Conditions at Panama and the reasons for a sea-level canal, WORCESTER R. WARNER and PROF. WILLIAM H. BURR . . . 41
Construction, modern shop . . . 373
Cooling bearings, methods of . . . 420

Deceased members, memorial notices of . . . 823
DICKIE, G. W., disc., bearings . . . 434
DIEMER, HUGO, disc., ideals in industrial engineering . . . 362
DODGE, JAMES M., history of the introduction of a system of shop management . . . 720
DONNELLY, WM. T., disc., liquid measuring apparatus, 717; collapsing pressures of steel tubes, 820; improvements of the Tennessee River . . . 543
Diamonds and diamond tools, GUS. C. HENNING . . . 41
DREIGE, JAMES, memorial notice of . . . 826
DURLEY, R. J., on the measurement of air flowing into the atmosphere through circular orifices in thin plates and under small differences of pressure . . . 193

Efficiency tests of turbine water wheels, WM. O. WEBBER . . . 590
Effect of a blow, A. W. MOSELEY and J. L. BACON . . . 605
Epochs in marine engineering, GEORGE W. MELVILLE . . . 41
EVELAND, S., disc., bearings . . . 475

FERNALD, R. H., results of the preliminary producer gas tests of the U. S. Geological Survey coal-testing plant at St. Louis . . . 302
Fireproofing . . . 71
FLEMING, WILLIAM R., memorial notice of . . . 827
Formation of anchor ice and precise temperature measurements, DR. HOWARD T. BARNES . . . 41
FREEMAN, JOHN R., on the safeguarding of life in theaters (President's Address, 1905) . . . 71

Gas, natural, under boilers . . . 171
" tests, producer . . . 302
Geological Survey producer gas tests . . . 302
Goss, W. F. M., disc., natural gas under boilers . . . 188
Governor, water-wheel . . . 642
GRAY, GEORGE A., memorial notice of . . . 827
GRINNELL, FREDERICK, memorial notice of . . . 828
GUILD, J. C., disc., improvements of the Tennessee River . . . 544

HAWKINS, JOHN T., disc., ideals in industrial engineering . . . 366
HENDERSON, GEO. R., disc., bearings . . . 420
HENNING, GUS. C., diamonds and diamond tools, 41; disc., collapsing pressures of steel tubes, 820; introduction system of shop management, 726; thermo-electric pyrometer . . . 564
HENRY, GEO. J., JR., regulation of high-pressure water wheels for power transmission plants . . . 662

PAGE
Henshaw, F. V., disc., introduction system shop management 727
Hess, Henry, disc., bearings, 441, 489; introduction system shop management, 725; pressure drop through poppet valves, 288; reinforced concrete 406
History of the introduction of a system of shop management, Jas. M. Dodge .. 720
Hitchcock, E. H., disc., natural gas under boilers 184
Holmes, Isaac V., memorial notice of 828
Hunt, Chas. Wallace, disc., proposed Research Committee, 513; improvements of the Tennessee River 547
Hunting, E. N., reinforced concrete applied to modern shop construction . 373
Hutton, F. R., disc., improvements of the Tennessee River, 550; introduction system shop management, 727; pressure drop through poppet valves, 291; producer gas tests 340

Ideals, realization of in industrial engineering 343
Improvement of the Tennessee River and power installation of the Chattanooga and Tennessee River Power Company at Hale's Bar, Tenn., Thos. E. Murray 520
Index, Vol. 27 843
Industrial engineering, realization of ideals in 343

Jacobus, D. S., disc., effect of a blow, 609; measurement of air, 230; liquid measuring apparatus 717
Johnson, A. E., Jr., disc., bearings 491
Jones, H. K., disc., bearings 487
Journal box, steam railway 861
Junge, F. E., disc., producer gas tests 334

Kafer, John Christian, memorial notice of 829
Karlan, O. K., disc., ideals in industrial engineering 371
Kelly, James R. F., memorial notice of 830
Kenerson, W. H., disc., bearings 488
Kent, Wm., disc., natural gas under boilers, 191; thermo-electric pyrometer 568
Kingsbury, A., disc., bearings, 425; measurement of air 228

Lane, H. M., disc., improvements of the Tennessee River 544
Liquid measuring apparatus 711
Locomotive bearings 420
" tests 610
Loscher, Albert P., memorial notice of 830
Low resistance thermo-electric pyrometer and compensator, W. H. Bristol .. 552
Lubricant, water as a, for machinery bearings 432
Lucke, Chas. E., pressure drop through poppet valves 232

Management, shop 720
Marine engineering, epochs in 41
Mattice, A. M., disc., bearings 467
McCallum, Alexander Campbell, memorial notice of 831

PAGE
MEAD, S. FRANK, memorial notice of ... 831
Measurement of air flowing into the atmosphere through circular orifices in thin plates and under small differences of pressure, R. J. DUDLEY ... 193
Measuring apparatus, new liquid ... 711
MELVILLE, GEORGE W., epochs in marine engineering ... 41
Memorial notices of members deceased during the year ... 823
MERRICK, J. VAUGHAN, memorial notice of ... 832
MINER, MAX HOWARD, memorial notice of ... 833
MOSELEY, A. W., and BACON, J. L., effect of a blow ... 605
MOSS, S. A., disc., measurement of air, 229; pressure drop through poppet valves ... 288
MOSSBERG, E., disc., bearings ... 471
MURRAY, THOS. E., improvement of the Tennessee River and power installation of the Chattanooga and Tennessee River Power Company at Hale's Bar, Tenn ... 520

Natural gas under boilers ... 171
NAYLOR, C. W., disc., bearings ... 432
NEWCOMER, MAJOR, disc., improvements of the Tennessee River ... 545
New liquid measuring apparatus, GEO. B. WILLCOX ... 711
NEWTON, CHAS. C., memorial notice of ... 834
New York Meeting, proceedings of ... 33

ORROK, GEO. R., disc., improvements of the Tennessee River ... 547

Panama, conditions at ... 41
PARKER, E. W., disc., producer gas tests ... 337
PARKER, JOHN C., disc., natural gas under boilers, 191; pressure drop through poppet valves ... 291
PEARSON, HIRAM, memorial notice of ... 835
PENNEY, R. L., disc., thermo-electric pyrometer ... 566
Pennsylvania Railroad locomotive tests, report of the committee co-operating on ... 610
PITKIN, ALBERT J., memorial notice of ... 835
POOLE, HERMAN, memorial notice of ... 836
Poppet valves ... 232
PORTER, H. F. J., realization of ideals in industrial engineering, 343; disc., reinforced concrete ... 402
Power, installation of the Chattanooga and Tennessee River Company at Hale's Bar, Tenn ... 520
Power plants, water ... 682
" transmission plants ... 662
PRATT, CHAS. R., disc., bearings ... 482
President's Address (1905), safeguarding of life in theaters ... 71
Pressure drop through poppet valves, CHAS. E. LUCKE ... 232
Proceedings of the Chattanooga Meeting ... 509
" " New York Meeting ... 33
Producer gas tests ... 302
Pyrometer, thermo-electric ... 552

PAGE

Realization of ideals in industrial engineering, H. F. J. Porter 343
Rearick, Chas. B., disc., introduction system shop management 725
Regulation of high pressure water wheels for power transmission plants, Geo. T. Henry, Jr 662
Reinforced concrete applied to modern shop construction, E. N. Hunting ... 373
Reist, H. G., disc., bearings 486
Replogle, Mark A., some stepping-stones in the development of a modern water-wheel governor. 642
Report of committee co-operating on Pennsylvania Railroad locomotive tests 610
Results of the preliminary producer gas tests of the U. S. Geological Survey coal-testing plant at St. Louis, R. H. Fernald 302
Rice, Calvin W., disc., collapsing pressures of steel tubes 820
Rogers, W. S., disc., bearings, 490; ideals in industrial engineering 370
Roller bearings 420

Safeguarding of life in theaters (*President's Address*, 1905), Jno. R. Freeman 71
Salmon, F. W., disc., regulating water wheels, 680; water-wheel governor. 660
Schaeffler, Jos. C., disc., reinforced concrete 395
Sea-level canal at Panama, reasons for 41
Seavey, John Franklin, memorial notice of 836
Shaft bearings, tests of 425
Shaw, T. Jackson, memorial notice of 837
Shop construction with reinforced concrete 373
" management 720
Sloat, George V., memorial notice of 837
Smith, Jesse M., disc., proposed Research Committee 514
Smith, Oberlin, disc., bearings 495
Smith, Thomas Gardner, memorial notice of 838
Snow, W. B., disc., measurement of air 227
Some stepping-stones in the development of modern water-wheel governor, Mark A. Replogle. 642
Souther, Henry, disc., thermo-electric pyrometer 565
Speed regulation of water-power plants, John Sturgess 682
Stanton, John, memorial notice of 838
Steel tubes, collapsing pressures of 730
Stetson, Geo. B., disc., improvements of the Tennessee River 546
Stevens, John Edward, memorial notice of 839
Stewart, R. T., collapsing pressures of Bessemer steel lap-welded tubes, three to ten inches in diameter 730
Sturgess, John, speed regulation of water-power plants 682
Suplee, Henry H., disc., bearings, 484; measurement of air 229

Taylor, Fred. W., disc., bearings, 499; collapsing pressures of steel tubes, 822; improvements of the Tennessee River, 545; introduction system shop management, 726; reinforced concrete, 417; thermo-electric pyrometer 589
Temperature measurements, precise 41
Tennessee River improvement 520

PAGE
Tests, efficiency, of turbine water wheels 590
" locomotive 610
" producer gas 302
Theaters, safeguarding of life in 71
Thermo-electric pyrometer 552
Thrust bearings, marine 434
Tools, diamond 41
TOWNE, FREDERICK TALLMADGE, memorial notice of 840
Tubes, collapsing pressures of 730
Turbine design as modified for close regulation, GEO. A. BUVINGER 698

UEHLING, E. A., disc., thermo-electric pyrometer 579
U. S. Geological Survey, producer gas tests 302
UPP, JOHN W., disc., bearings 483
Use of natural gas under boilers, JAY M. WHITHAM 171

Valves, poppet 232

WARNER, WORCESTER R., and BURR, WM. H., conditions at Panama and the reason for a sea-level canal 41
Water-power plants, speed regulation of 682
" wheel governor 642
" wheels, turbine, efficiency tests of 590
" " regulation of 662
WEBBER, WM. O., efficiency tests of turbine water wheels 590
WELLMAN, S. T., disc., natural gas under boilers 188
WHITE, J. J., disc., bearings 436
WHITHAM, JAY M., use of natural gas under boilers 171
WILLCOX, Geo. B., new liquid measuring apparatus 711
WILLISTON, A. L., disc., bearings, 497; reinforced concrete 415
WOOD, MATTHEW PATTERSON, memorial notice of 841
WOOLSON, IRA H., disc., thermo-electric pyrometer 565
WYER, S. S., disc., gas tests 340